Journal of Asian Business Management
Vol. 2, No. 1, January-June 2010: 173-187

GLOBALIZATION AND WAGE INEQUALITY: A REVISIT OF EMPIRICAL EVIDENCES WITH NEW APPROACH

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Globalization has found to be having it's prone and cons in the economies. In the present study the objective of the paper is to see not only it's negative impact on wage inequality but also to check the long run cointegration among the various ingredients or components of globalization, wage inequality and capital output ratio. For unit root analysis (A)DF test, PP test and most powerful test NP test has been carried out and all variable except output are found to be non-stationary. For analyzing the impact of globalization different specification of multiple semi-log linear regression model has been used and normality check for residuals of all specifications has been carried out in order to check whether specification of the model is right or not. It is found that all ingredients or components of globalization having negative impact on the share of unskilled workers. Results of cointegration analysis show that all ingredients of globalization, wage inequality and capital-output ratio are cointegration in long run.

INTRODUCTION

Globalization and wage inequality have emerged as hot topic of serious research since the economic reforms have been adopted by the countries to integrate domestic economy with rest of world. More recently the focus of researchers have been shifted from developed to developing countries as they are, mainly, experiencing the consequences of the liberalization programs. The basic argument supported by empirical research is that globalization by developing countries is one basic factor responsible for raising their aggregate incomes via increasing labour productivity. There is great debate between academic and policy makers on the merits and demerits of liberalization effects on the labour market, product market and finally on the trends of the inequality in the country.

Indian manufacturing sector has been taken for the empirical analysis in this study because of few important reasons, such as:

- India is the country that has made drastic liberalization of its external sector as compared to any other developing countries in the world.
- It is the Indian manufacturing sector in which the decline in the average tariff is more.
- India is the country that has reduced NTBs (non tariff barriers) since the

liberalization measures have taken place.

- Liberalization measures adopted by India were not due to policy makers will (that is they were not come endogenously) but were due to IMF conditionalities (that is they came exogenously).

In this paper the two major component of liberalization that are taken in to consideration are trade and foreign direct investment (FDI).

As for as wage inequality is concerned, currently the researchers interest is shifted towards measuring the inequality in gender pay gaps and wages inequality between skilled and unskilled workers in developing countries. Further, skill of the workers has been identified by the researchers in two different ways- one way of measuring skill is according to the workers educational level and in second way skilled worker is defined as those are white–collar workers (that is non production workers) and unskilled are blue–collar workers (that is production workers).

Wage inequality is measured by a ratio of wage rate of skilled labour to wage rate of unskilled labour. This ratio is known as "skill premium". Wage inequality has also been measured by share of (un)skilled workers in total wages.

The theoretical linkage between trade and wage is found in Heckscher-Ohlin-Stopler-Samulelson (HOSS) model that links relative output or product prices to relative wages. The relevance of the paper will be lying on knowing that whether the empirical evidence from India holds in the line with HOSS model and also testing the causality direction of different variables used to measure globalization, wage inequality and capital output ratio.

SECTION–II

LITERATURE REVIEW

Study by Ghosh, Saunders, and Biswas (2000), using the time series data of US for the period of 1965-1996, investigated the relationship between the net export and the wage inequality in US in the both the short run and the long run. He found that each data series is non stationary and autoregressive of order one (-AR (1)).

Then cointegration[1] test was conducted to determine the existence of a stable, long run relationship among all the test variables (net export, median skilled workers and median unskilled workers). They found the Cointegration between the net export and the wage inequality. They also found the long run relationship between the net exports and the median workers of the both skilled and the unskilled labors. Next, they tested the short run dynamics and the casual relationship between the test variables (net export, median skilled workers and median unskilled workers). For that, they used the Vector Error Correction (VEC) estimation method. This method is useful to investigate that whether the system is in the short run equilibrium or in disequilibrium. In this case they first used bivariate model. They found that there is no statistical evidence to suggest that the net exports have any impact on the wage inequality in the short run. However, they found that the wage inequality has a negative impact on the trade in the short run.

By extending the bivariate model to the trivariate they found that the combined effect of the skilled and the unskilled wage changes on trade is negative in the short run. However, the net exports have no statistically significant impact on either the skilled or the unskilled wages in the short run.

In this study the authors have used only the Balance of Payments Deficit (BOPD) as measure of the openness/integration but there are other ways through which the trade could decide the destiny of the low skilled workers for example the trade induced SBTC, the immigration, the exchange rate, the offshoring, and the outsourcing that. The effects of these ways on wage inequality have not been discussed by this study.

Fan and Cheung (2004) tried to test the hypothesis that whether there is positive relationship between the relative wages of the skilled and the unskilled workers in the Hong Kong with the Hong Kong trade with the main land China. In this study period of the analysis was 1985-1992. This study used household data. The authors have taken the wage gap between the skilled and the unskilled worker as the dependent variable and the share of the volume of the Hong Kong's trade with the main land China in the Hong Kong's total trade volume, the proportion of the university degree holders in the total labor force, and the unemployment rate as the independent variables.

The result of the unit root test[2] for the four variables- the Relative Wage Rate of the Skilled and Unskilled Workers (LWRUP), the Share of the Hong Kong's with the China to the Hong Kong's total trade with the world (LTCSH), the Unemployment Rate (LUNEMP), and the Proportion of the University Graduates in Hong Kong's Labor Force (LDEG) – suggest that variables are best characterized as integration of degree one i.e. autoregressive of order one found to be exist (AR (1)), in both cases when the time trend variable is included in the regression and when it is not included in the regression. They found that the null hypothesis of a unit root test for each variable in its level form cannot be rejected. However the null hypothesis of unit root test for each variable in its first difference form is rejected implying that variables are characterized as zero integration in the first difference form. To test the long run relationship between the relative wages, the Hong Kong-China trade, the education and the unemployment rate, the author used Johansen's (1991) multivariate Cointegrating testing approach[3] which is based on the Maximum Likelihood Estimation (MLE). They found, a consistently statistically significant positive relationship between the shares of the total trade with the main land China and the relative wage inequality, the wage gap decreases with the proportion of the skilled labor and the negative correlation between the unemployment rate and the relative wage gap between the skilled and the unskilled labors.

Further, Sim's decomposition method (decomposition of forecast error variance) was used as an alternative approach for explaining the prediction power of the trade, the share of the university graduates and the unemployment rate for the wage inequality. They found that trade explains much higher percentage of variance for relative wage than the proportion of the university graduates and unemployment rate.

In this study the authors have used the share of volume of the Hong Kong's trade with the main land China in the Hong Kong's total trade volume, the proportion of the university degree holders in the total labor force, and the unemployment rate as measures of the openness/integration, but there are other ways through which trade could decide the destiny of the low skilled workers for example the trade induced SBTC,

the immigration, the exchange rate, the offshoring, and the outsourcing. These variables are not covered by this study.

Other preferred measures used by the researchers for the openness/integration are import courage ratio, export intensity, and measure of contemporaneous real import and export flows.

Study by Berman, Bound and Griliches (1994) developed a different decomposition approach in this area. Though they also found that within industry component dominates the between industry components in both cases of the employment and the wages. However, they found that for the last period -1979 to 1987 – between industry components plays a larger role. Next, the study decomposes within and between industry components into within-between sectoral components. The authors have taken consumption, export, import and defense as sectors. They found that most of acceleration in the proportion of nonproduction workers/skilled workers wages in the particular industry and acceleration in the share of employment in the particular industry were due to within skill upgrading. Thus the results found to be favoring SBTC hypothesis.

To validate the decomposition findings and give more insights they carried out regression analysis on different specifications and found similar results as they derived from decomposition approach.

Esquivel and Lopez (2003) in their study using mandated wage approach[4] proposed by Lemar (1996) have separated the effects of the technological change and the trade on the real wage inequality for the period 1988-94 and 1994-2000. They estimated two equations using pooled-time series-cross-section data.

They have used the capital, the production, and the non production workers as the factors of production. They found most of the coefficients statistically significant from the equation first and second; except the coefficient of the production worker for the period 1988-94 and the coefficient of the capital for the period 1994-2000.

After using the domestic inflation as deflator, mandated annual change was calculated in both the real wages and the wage gap between the production and the non-production workers. They found that before NAFTA period the wages has fallen but after NAFTA period the wages has increased and that both the trade liberalization effect and the technology effect have a negative effect on the wage inequality in pre NAFTA period, while effects of the trade liberalization and the technology was positive in post NAFTA period. Thus, these results contradict the theoretical explanations.

By analyzing the raw data they found that the average wages of the non-production workers were well above the average wages of the production workers for 1988 and for 2000. However, in the both years the minimum values of the both categories were not statistically different. So, they developed a new classification of the high wage earners (in the place of the skilled workers) and the low wage earners (in the place of the low skilled workers). Using this new classification they found increase in the wage gap for both periods. They found that the trade liberalization effect on the wage inequality for the first period was negative, while the technological effect for the wage inequality was positive. Therefore they concluded that the overall effect on wage inequality depends on the relative magnitude of these two effects.

SECTION–III

METHODOLOGY, DATA AND MODEL DESCRIPTION

The present study employs the model developed by Berman, Bound and Griliches (1994) and later it is used by Machin and Reenen (1997). This model is derived from translog cost function. The cost function assumed to be quasi fixed as capital is assumed to be fixed and both production and nonproduction workers are treated as variable. Translog variable cost function can be written as:

$$\ln(CV) = \alpha_1 + \alpha_y \ln(Y) + \Sigma_i \alpha_i \ln(W_i) + \beta \ln(K) + .5\gamma_{yy} \ln(Y)^2 + .5\Sigma_i \Sigma_j \gamma_{ij} \ln(W_i)\ln(W_j) +$$
$$.5\alpha \ln(K)^2 + \Sigma_i \rho Y_i \ln(Y)\ln(W_i) + \Sigma_i \rho_i \ln(W_i)\ln(K) + \kappa \ln(Y)\ln(K)$$

Where CV represents variable costs, Y is value added, the W's represent unit costs of the variable factors and K represents capital. Cost minimization implies share equations of the form

$$S_i = \alpha_i + \rho Y_i \ln(Y) + \sum_j \gamma_{ij} \ln(W_j) + \rho_i \ln(K)$$

Given that $\Sigma S_i = 1$ and the symmetry and homogeneity restrictions, only one of the two share equations required to be estimated. Using the restrictions of constant return to scale assumption the wage bill share equation for unskilled workers can be written as:

$$SUWW = \alpha_1 + \alpha_2 \ln(Y) + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right) + \alpha_4 \ln\left(\frac{K}{Y}\right) + \varepsilon$$

The specifications of the models used in the present study are:

Model. 1. $$SUWW_t = \alpha_1 + \alpha_2 \ln\left(\frac{K}{Y}\right)_t + \alpha_2 \ln Y_t + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right)_t + \alpha_4 (KFOindex)_t + \varepsilon_t$$

Model. 2. $$SUWW_t = \alpha_1 + \alpha_2 \ln\left(\frac{K}{Y}\right)_t + \alpha_2 \ln Y_t + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right)_t + \alpha_4 \ln\left(\frac{TT}{GDP}\right)_t + \alpha_5 \ln\left(\frac{FDI}{GDP}\right)_t + \varepsilon_t$$

Model. 3. $$SUWW_t = \alpha_1 + \alpha_2 \ln\left(\frac{K}{Y}\right)_t + \alpha_2 \ln Y_t + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right)_t + \alpha_4 \ln\left(\frac{TMT}{GDP}\right)_t + \alpha_5 \ln\left(\frac{FDI}{GDP}\right)_t + \varepsilon_t$$

Model. 4. $$SUWW_t = \alpha_1 + \alpha_2 \ln\left(\frac{K}{Y}\right)_t + \alpha_2 \ln Y_t + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right)_t + \alpha_4 \ln\left(\frac{TTDCs}{GDP}\right)_t + \alpha_5 \ln\left(\frac{FDI}{GDP}\right)_t + \varepsilon_t$$

Model. 5. $$SUWW_t = \alpha_1 + \alpha_2 \ln\left(\frac{K}{Y}\right)_t + \alpha_2 \ln Y_t + \alpha_3 \ln\left(\frac{w^{usk}}{w^{sk}}\right)_t + \alpha_4 \ln\left(\frac{TTLDCs}{GDP}\right)_t + \alpha_5 \ln\left(\frac{FDI}{GDP}\right)_t + \varepsilon_t$$

Where SUWW is share of unskilled workers to total wages, K/Y denotes capital output ratio and TT/GDP measures ratio of total trade to gross domestic product, TMT/GDP measures ratio of total merchandise trade to gross domestic product, and finally FDI/GDP measures ratio of foreign direct investment to gross domestic product.

Similarly to analyze the impact of direction of trade on wage inequality variable TT/GDP is replaced by variable TTDCs/GDP and TTLDCs/GDP in next two models. Where TTDCs denotes trade with developed countries and TTLDCs denotes trade with developing countries. KFO index is an index of globalization introduced in2002 (Drecher, 2006). More specifically it has three dimensions namely economic globalization, political globalization, and social globalization. In the present study different dimensions of index have been used namely overall globalization, economic globalization, actual globalization and removal of restrictions or globalization over restrictions.

This study has used time series data from 1980-81 to 2005-06. Data Sources for the study are EPW-CD Rom (Vol-II), ASI Factory sector, Hand book of statistics (RBI), Indian economy database (Vol-II), WDI, and UNCTAD and KFO index has been downloaded from *http://globalization.kfo.ethc.ch/*.

Wage inequality in this study is measured by share of unskilled workers (and unskilled workers are taken as non production workers) in total workers, output has been measured by ratio of net value added to gross domestic product, capital output ratio has been measured by a ratio of gross fixed capital formation to net value added, openness has been measured by different dimensions of KFO index, ratio of total trade to gross domestic product, ratio of total merchandise trade to gross domestic product and by ratio of inflow of foreign direct investment to gross domestic.

However, due to problem of multicollinearity between ratio of total merchandise trade (and also total trade) and gross domestic product and ratio of foreign direct investment to gross domestic, between ratio of total trade with developed countries to gross domestic product and ratio of foreign direct investment to gross domestic product, between ratio of total trade with developing countries to gross domestic product and ratio of foreign direct investment to gross domestic product and between different dimensions of KFO index and ratio of wages of unskilled to skilled workers, first ratio of wages variable was dropped and in case of measure of FDI and measure of trade variable case first FDI was dropped and then measure of trade variable was dropped. Normality check of residuals for all specification has been carried out to check the specification of the model. For normality check Ryan-Joiner test has been carried out (using Minitab 15) which is similar to Shapiro-Wilk test and used for small sample (in SPSS Shapiro-Wilk test is used for sample size less than 50 and in SAS for sample size less than 2000)[5]. Further, unit root analysis has been carried out using (Augmented) Dickey-Fuller test (DF/ADF), Phillips-Perron (PP) test and finally Ng and Perron (NP) test. And following Engle-Granger two-step procedure cointegration analysis has been carried out for all model.

SECTION–IV

DATA ANALYSIS AND FINDINGS

First of all unit root test has been carried out for all variables using (Augmented) Dickey-Fuller test (DF/ADF), Phillips-Perron (PP) test and finally Ng and Perron(NP) test. Ng and Perron has given three tests for carrying out unit root analysis but MZa and MZt are said to be more powerful test (Mollick, 2009), so this study has used these two tests only. The unit test results reports that all variable are non stationary except

variable of output. Results of unit roots are reported in Table 1. Critical t-values are reported in parentheses.

Table 1

	Specifications				*Unit root tests*			
Variables	*None*	*C*	*C&T*	*C,T & A R(k)*	*DF/ (ADF)*	*PP (k)*	*NP (MZa) (k)*	*NP (MZt) (k)*
SUWW	Yes	–	–	–	-1.8598	-2.11(2)	–	–
					(-2.66)	(-2.66)		
					(-1.96)	(-1.96)		
					(-1.61)	(-1.61)		
SUWW	–	Yes	–	–	0.324	0.648(3)	1.0044(0)	0.5846(0)
					(-3.724)	(-3.72)	(-13.800)	(-2.5800)
					(-2.986)	(-2.98)	(-8.1000)	(-1.9800)
					(-2.632)	(-2.63)	(-5.7000)	(-1.6300)
SUWW	–	–	Yes	–	-1.732	-1.587(2)	-4.46012(0)	-
					(-4.374)	(-4.37)	(-	1.4034(0)
					(-3.603)	(-3.60)	(-23.80)	(-3.4200)
					(-3.238)	(-3.24)	(-17.300)	(-2.9100)
							(-14.200)	(-2.6200)
DSUWW	Yes	–	–	–	-4.921*	-4.922	–	–
					(-2.665)	(-2.66)		
					(-1.956)	(-1.95)		
					(-1.609)	(-1.61)		
LRNVATGDP	Yes	–	–	–	-0.2135	-0.211(2)		
LRNVATGDP	–	Yes	–	–	-1.508	-1.848(2)	-88.955*(2)	-6.6687*(2)
LRNVATGDP	–	–	Yes	–	-1.5606	-1.898(2)	-97.37*(2)	-6.9759*(2)
LRNVATGDP	–	–	–	Yes(2)	-2.8677			
					(-4.42)			
					(-3.62)			
					(-3.248)			
DLRNVATGDP	Yes	–	–	–	-3.865*	-3.918*(2)		
LRGFCFTNVA	Yes	–	–	–	-0.638	-0.313 (9)		
LRGFCFTNVA	–	Yes	–	–	-3.2688	-3.232(1)	-10.8421(0)	-2.3237(0)
LRGFCFTNVA	–	–	Yes	–	-4.3656	-4.363(1)	-12.1012(0)	-2.44666(0)
D LRGFCFTNVA	Yes	–	–	–	-7.5420*	-12.99*(23)		
LRWUWTSW	Yes	–	–	–	-1.5835	-1.584(0)		
LRWUWTSW	–	Yes	–	–	0.26588	0.787(4)	0.9311(0)	0.5368(0)

	Specifications				*Unit root tests*			
Variables	*None*	*C*	*C&T*	*C,T &*	*DF/*	*PP*	*NP (MZa)*	*NP (MZt)*

Contd.

				A R(k)	*(ADF)*	*(k)*	*(k)*	*(k)*
LRWUWTSW	–	–	Yes	–	-1.7848	-1.640(2)	-4.66702(0)	-1.44493(0)
D LRWUWTSW	Yes	–	–	–	-4.998*	-4.997*(1)		
LRFDITGDP	Yes	–	–	–	-0.9763	-1.342(10)		
LRFDITGDP	–	Yes	–	–	-1.1327	-0.884(5)	-2.44785(0)	-0.9646(0)
LRFDITGDP	–	–	Yes	–	-3.3743	-3.078(5)	-9.49749(0)	-2.16631(0)
DLRFDITGDP	Yes	–	–	–	-5.1667*	-5.355*(5)		
LRTMTTGDP	Yes	–	–	–	-1.769	-1.721(1)		
LRTMTTGDP	–	Yes	–	–	0.94917	0.986(1)	1.61267(0)	0.93517(0)
LRTMTTGDP	–	–	Yes	–	-2.0438	-1.982(2)	-4.37525(0)	-1.26005(0)
DLRTMTTGDP	Yes	–	–	–	-3.7176*	-3.717*(0)		
LRTTTGDP	Yes	–	–	–	-2.1738	-1.739(2)		
LRTTTGDP	–	Yes	–	–	1.8608	1.403(2)	0.56255(0)	0.25339(0)
LRTTTGDP	–	–	Yes	–	-1.9487	-1.977(2)	-2.12103(0)	-0.75912(0)
DLRTTTGDP	Yes	–	–	–	-2.6809*	-2.649*(1)		
LRTTDCsTGDP	Yes	–	–	–	-0.750	-0.672(2)		
LRTTDCsTGDP	–	Yes	–	–	-0.5269	-0.847(2)	-1.65174(0)	-0.66019(0)
LRTTDCsTGDP	–	–	Yes	–	-2.0379	-2.211(2)	-4.46151(0)	-1.42724(0)
LRTTDCsTGDP	–	–	–	Yes(4)	-3.0382			
D LRTTDCsTGDP	Yes	–	–	–	-8.140*	-3.798*(1)		
LRTTLDCsTGDP	Yes	–	–	–	-2.103	-1.761(2)		
LRTTLDCsTGDP	–	Yes	–	–	1.2199	0.947(2)	-0.90910(0)	-0.36772(0)
LRTTLDCsTGDP	–	–	Yes	–	-3.6966	-3.575(2)	-4.26772(0)	-1.34884(0)
DLRTTLDCsTGDP	Yes	–	–	–	-3.3208*	-3.308*(1)		
KFOGLOB	Yes	–	–	–	4.4444	4.433(2)		
KFOGLOB	–	Yes	–	–	0.9534	0.948(2)	-0.287(5)	-0.1389(5)
KFOGLOB	–	–	Yes	–	-2.2491	-2.256(4)	-2.849(0)	-1.1758(0)
DKFOGLOB	Yes	–	–	–	-2.6479*	-2.513*(2)		
KFOECOFLO	Yes	–	–	–	4.8970	5.41727(5)		
KFOECOFLO	–	Yes	–	–	2.4837	3.9644(8)	1.244(1)	0.628(1)
KFOECOFLO	–	–	Yes	–	-1.1274	-0.270(12)	-1.690(0)	-0.595(0)
DKFOECOFLO	Yes	–	–	–	-1.9112*	-1.655*(3)		
KFOACTLFO	Yes	–	–	–	3.3558	7.23035(24)		
KFOACTLFO	–	Yes	–	–	1.13415	3.7147(24)	1.878(0)	1.576(0)
KFOACTLFO	–	–	Yes	–	-1.9165	-1.632(15)	-3.836(0)	-1.238(0)
DKFOACTLFO					-3.6326*	-3.629* (5)		
KFOREST	Yes	–	–	–	4.00400	4.004(0)		
KFOREST	–	Yes	–	–	2.10911	2.239(1)	2.814(0)	2.258(0)
KFOREST	–	–	Yes	–	-1.0761	-0.994(1)	-2.541(0)	-0.766(0)
DKFOREST	Yes	–	–	–	-2.345**	-2.157**(1)		

*denotes significant at 1% level, **denotes significant at 5% level. (K) denotes lag length. Note: selection of lag length in NP test is based on Spectral GLS-detrended AR based on SIC and selection of lag length (Bandwidth) in PP test is based on Newey-West using Bartlett kernel.

In the next step cointegration analysis has been carried out. So, in carrying out cointegration analysis non stationary variable has been dropped. Cointegration analysis has been done using Engle-Granger two step procedure. In first step regression analysis has been carried out using OLS technique. In second step residuals has been calculated

and then unit root test has been performed on residuals using Dickey-Fuller and Phillips-Perron tests first without constant term and then without constant term. Regression results of all models are presented in Table 2.

Table 2
Regression Results

Independent variables	*Coefficients*	*T-value*	*Adj R^2 (Standard Errors)*	*VIF*	*AIC/ BIC*	*Breusch-Pagan test for heteroskedasticity*	*DW*
Model 1							
Constant	0.798242*	53.96615	0.886595 (.01632)		-137.40/ -133.63	chi2(1) = 0.82 Prob > chi2 = 0.3653	1.640416
KFO overall Globalization	-0.004445*	-10.06376		1.44			
Capital output ratio	0.046462**	2.595997		1.44			
Model 2							
Constant	0.758043*	65.00521	0.912915 (.0143)		-144.27/ -140.496	chi2(1) = 0.40 Prob > chi2 = 0.5277	1.770784
KFOECONOMICFLOWS	-0.004684*	-11.78302		1.43			
LRGFCFTNVA	0.044751*	2.860884		1.43			
Model 3							
Constant	0.765585*	76.54341	0.914883 (.01414)		-144.86/ -141.09	chi2(1) = 0.74 Prob > chi2 = 0.3881	1.954178
KFOACTUALFLOWS	-0.006062*	-12.87542		1.48			
LRGFCFTNVA	0.039462**	2.381428		1.48			
Model 4							
Constant	0.752612*	60.25077	0.898482 (.01544)		-140.28/ -136.509	chi2(1) = 0.47 Prob > chi2 = 0.4907	1.657846
KFORESTRICTIONS	-0.003721*	-10.76250		1.40			
LRGFCFTNVA	0.050549*	3.032765		1.40			
Model 5							
Constant	0.563627*	14.71320	0.709270 (.02613)		-112.93/ -109.153	chi2(1) = 0.18 Prob > chi2 = 0.6750	1.359773
LRFDITGDP	-0.017530*	-5.047515		1.23			
LRGFCFTNVA	0.087784*	3.310024		1.23			
Model 6							
Constant	0.439335*	10.67496	0.824647 (.02029)		-126.07/ -122.298	chi2(1) = 0.06 Prob > chi2 = 0.8015	1.372915
LRGFCFTNVA	0.067892*	3.199318		1.31			
LRTMTTGDP	-0.118711*	-7.574555		1.31			
Model 7							
Constant	0.442953*	10.66349	0.819355 (.0206)		-125.29/ -121.525	chi2(1) = 0.14 Prob > chi2 = 0.7101	1.366960
LRGFCFTNVA	0.057485*	2.578982		1.40			
LRTTTGDP	-0.119457*	-7.417524		1.40			
Model 8							
Constant	0.385712*	3.358284	0.562886 (.03204)		-102.32/ -98.550	chi2(1) = 0.34Prob > chi2 = 0.5612	1.475910
LRGFCFTNVA	0.121386*	3.995988		1.08			
LRTTDCSTGDP	-0.143379*	-3.040211		1.08			
Model 9							
Constant	0.414928*	9.260079	0.820704 (.02052)		-125.49/ -121.72	chi2(1) = 0.48Prob > chi2 = 0.4884	1.340667
LRGFCFTNVA	0.057226*	2.575997		1.41			
LRTTLDCSTGDP	-0.061077*	-7.456989		1.41			

*denotes significant at 1% level and **denotes significant at 5% level.

Results obtained from regression analysis shows that various ingredients of globalization has negative impact on share of wages of unskilled workers in total wages which implies that globalization increases wage inequality. Positive and significant value of the coefficient of capital-output ratio shows that in Indian manufacturing

industries capital-skill complimentarity do not exist. VIF values shows that in all models multicollinearity does not exist as in all models VIF is less than 2. DW statistics shows that serial correlation is not a problem in any of the model as either serial correlation does not exist or DW values falls in inconclusive range. Breusch-Pagan test for heteroskedasticity shows that in all models null hypothesis of constant variance cannot be rejected which implies that any of the models do not suffers from problem of heteroskedasticity. AIC and SIC values shows that all models have good fit and right specification as in all models values of both criteria's are very low. Finally, normality test of residuals has been carried out to test for correctness of specifications and it is found that in all models normality assumption cannot be rejected which implies that specification of all models is right.

Following Engle-Granger methodology in second step residuals from all models has been calculated and then unit root analysis has been carried out. Result of unit root of residuals has been presented in Table 3.

Table 3
Results of Unit Root on Residuals or Results of Cointegration

		Test statistics	
Variable	*Specification*	*DF*	*PP*
Res1	Level form (None)	-4.007775*	-4.079299*
	Constant	-3.910848*	-3.988201*
Res2	Level form (None)	-4.371945*	-4.429295*
	Constant	-4.279271*	-4.343348*
Res3	Level form (None)	-4.787205*	-4.806827*
	Constant	-4.683178*	-4.707958*
Res4	Level form (None)	-4.139033*	-4.204464*
	Constant	-4.051967*	-4.123222*
Res5	Level form (None)	-3.385651*	-3.350844*
	Constant	-3.274647**	-3.232187**
Res6	Level form (None)	-3.679624*	-3.720297*
	Constant	-3.599487**	-3.639585**
Res7	Level form (None)	-3.698542*	-3.744817*
	Constant	-3.619276**	-3.665386**
Res8	Level form (None)	-3.959769*	

-3.995965*		
	Constant	-3.852740*
-3.884947*		
Res9	Level form (None)	-3.626463*
-3.698859*		
	Constant	-3.539880**
-3.613868**		

* and ** denotes significant at 1%and 5% level respectively. (In case of Level form critical value for DF test are -2.660720, -1.955020, -1.609070 at 1%,5% and 10% respectively and critical values for PP test are -2.660720, -1.955020, -1.609070 at1%,5% and 10% respectively.)(In case of constant form critical values for DF test are -3.724070, -2.986225, -2.632604 at 1%, 5% and 10% respectively and for PP test are -3.724070,-2.986225,-2.632604 at 1%, 5%, and 10% respectively)

Res denotes residuals obtained from different models. (where). Cointegration result shows that test variables used in different models are cointegrated in the long run. This implies that any policy decision which affects all or any of the variables included in any model will affect other variables also as long run equilibrium will get affected.

CONCLUSIONS

Since, measures towards globalization have been taken by India to take advantage by integrating Indian economy to rest of world. However, regression result shows that wage inequality has increased due to overall globalization, and it's all other dimensions. Regression results shows that wage inequality also has increased due to FDI, merchandise trade, total trade, and not only trade with developed countries but also with developing countries. It is also found that in long run cointegration exist among different variants of globalization capital-output ratio and wage inequality. Therefore for government, before taking any decision, have to consider that it's any decision which affects globalization (i.e., measures adopted to liberalize the economy in some or other directions or integrating the economy deeply with the rest of world) will also affect the capital-output ratio and wage inequality.

Notes

1. Two time series are said to be cointegrated if, both series are individually integrated of the same order say p and there exist a linear combination of the variables which are integrated of a lower order say q than there exist an integration of the series i.e., q<p.
2. The term unit root refers to the polynomial in lag operator, if the time series has unit root this implies that time series is non stationary.
3. It is a procedure that allows for testing restricted forms of the Cointegrating vector(s). It is concerned with identifying the number of Cointegrating vectors with a general n vector autoregression.
4. In mandated approach we consider mandated changes in factor cost or price. These are the changes in factor cost/price that are needed to keep the zero profit conditions operative in the face of changes in the technology and product prices.
5. In the present study results R-J test has been given in the Annexure and results of Shpiro-Wilk test will be available on the request to the author.

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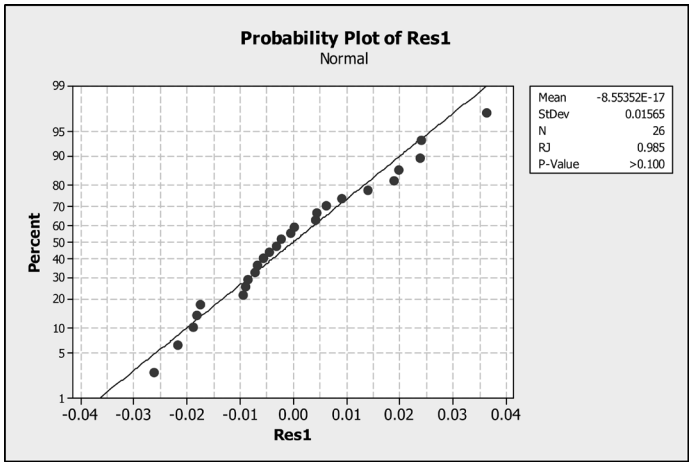
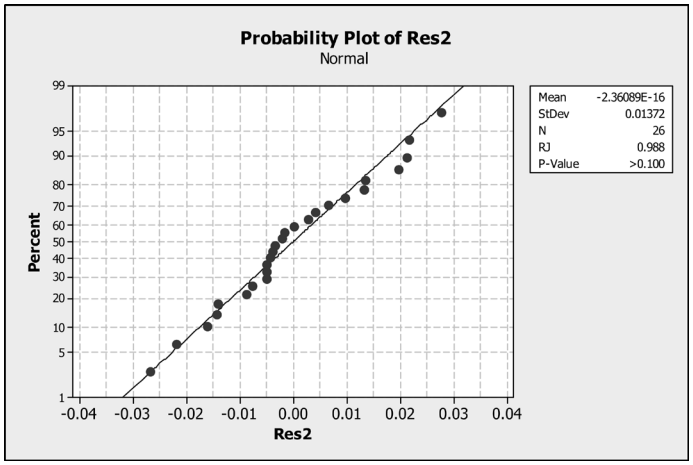
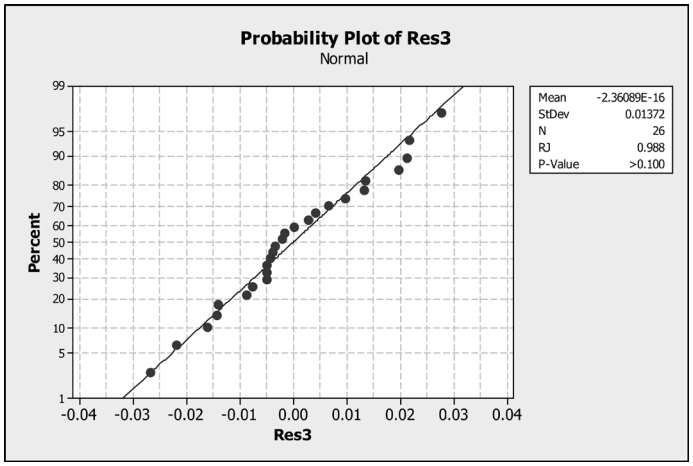
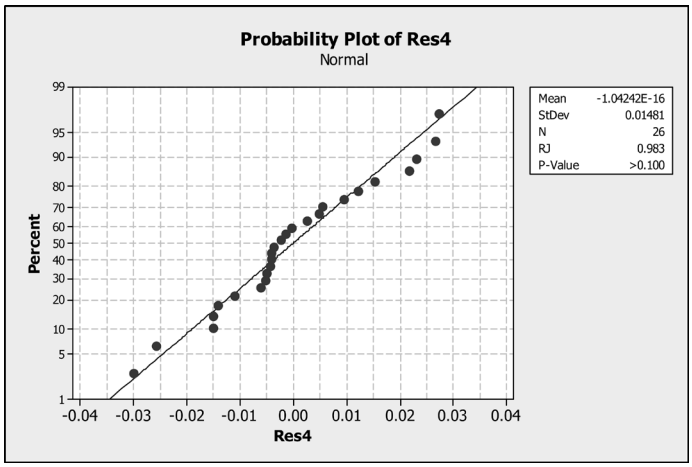
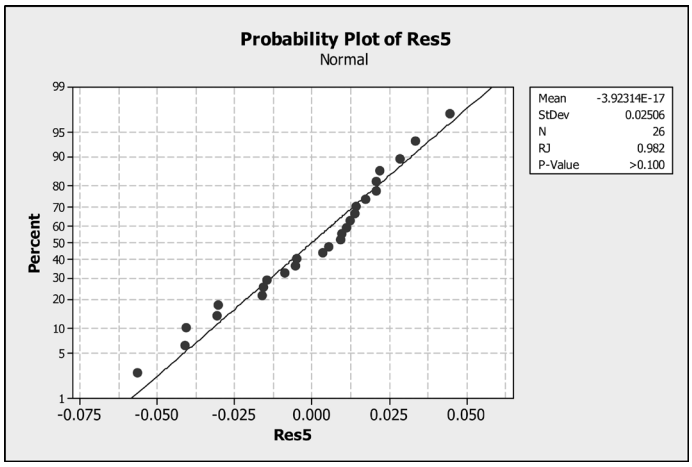
ANNEXURE

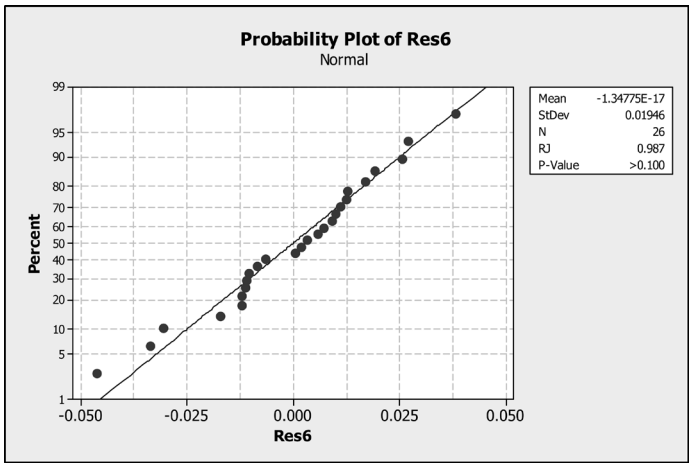

Probability Plot of Res1
Normal
Mean -8.55352E-17
StDev 0.01565
N 26
RJ 0.985
P-Value >0.100
Percent
Res1

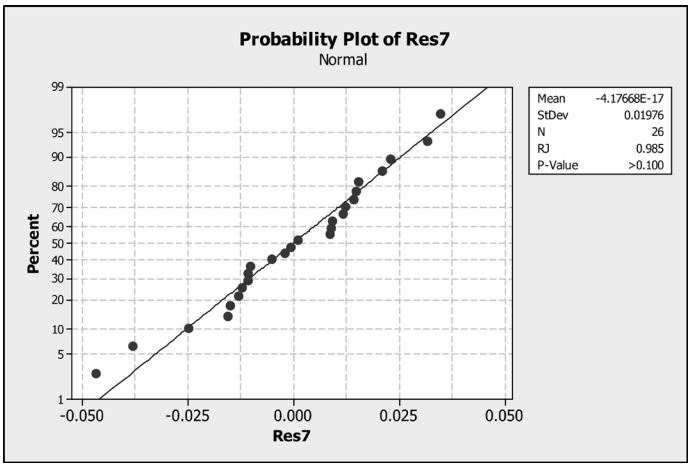

Probability Plot of Res2
Normal
Mean -2.36089E-16
StDev 0.01372
N 26
RJ 0.988
P-Value >0.100
Percent
Res2

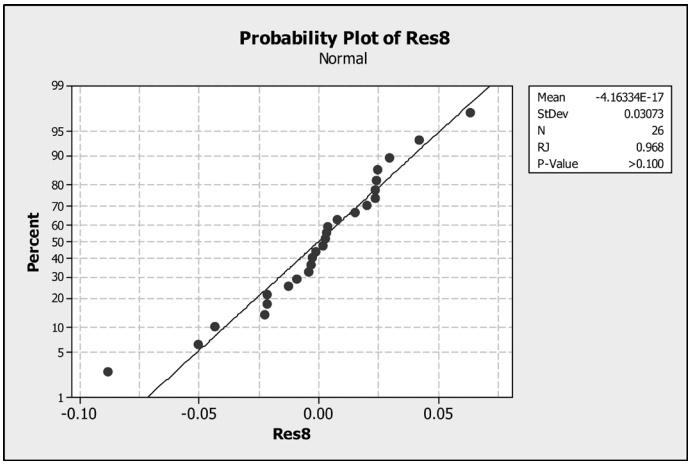

Probability Plot of Res3
Normal
Mean -2.36089E-16
StDev 0.01372
N 26
RJ 0.988
P-Value >0.100
Percent
Res3

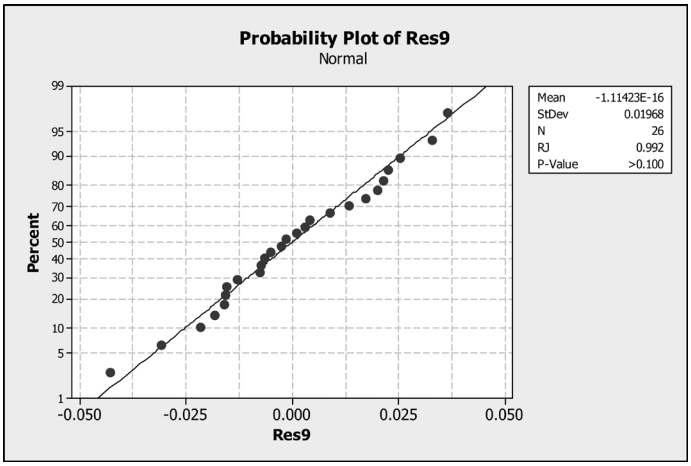

Probability Plot of Res4
Normal
Mean -1.04242E-16
StDev 0.01481
N 26
RJ 0.983
P-Value >0.100
Percent
Res4


Probability Plot of Res5
Normal
Mean -3.92314E-17
StDev 0.02506
N 26
RJ 0.982
P-Value >0.100
Percent
Res5


Probability Plot of Res6
Normal
Mean -1.34775E-17
StDev 0.01946
N 26
RJ 0.987
P-Value >0.100
Percent
Res6


Probability Plot of Res7
Normal
Mean -4.17668E-17
StDev 0.01976
N 26
RJ 0.985
P-Value >0.100
Percent
Res7
99
95
90
80
70
60
50
40
30
20
10
5
1
-0.050
-0.025
0.000
0.025
0.050


Probability Plot of Res8
Normal
Mean -4.16334E-17
StDev 0.03073
N 26
RJ 0.968
P-Value >0.100
Percent
Res8
99
95
90
80
70
60
50
40
30
20
10
5
1
-0.10
-0.05
0.00
0.05


Probability Plot of Res9
Normal
Mean -1.11423E-16
StDev 0.01968
N 26
RJ 0.992
P-Value >0.100
Percent
Res9
99
95
90
80
70
60
50
40
30
20
10
5
1
-0.050
-0.025
0.000
0.025
0.050